POWER REQUIREMENT STUDY,

GLADES ELECTRIC COOPERATIVE, INC.

FLORIDA 35 CLADES

(Revised)

Prepared by
Program Analyst
Office of the Administrator
RURAL ELECTRIFICATION ALMINISTRATION

August 1952



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POWER REQUIREMENT STUDY 1/

FLORIDA 35 GLADES (Revised)

Foreword

The study has been prepared by the Rural Electrification Administration for use in determining the present and estimated future power requirements of the Glades Electric Cooperative. Inc. (Florida 35 Glades).

The estimates of future loads contained in the study have been arrived at from a field survey in the Cooperative's area and from basic data obtained in the Cooperative's office. The estimates of kwh consumption for farm, nonfarm and town residential consumers used herein are based upon a projection of historical trends in consumption, type of farm, income, competitive sources of energy, and other economic factors which are believed to have a bearing on the future use of electricity in this area.

The estimates of average unit kilowatt demands per consumer at peak load, corresponding to the estimated average kilowatt-hour consumption per member per month of farm, nonfarm and small commercial consumers, have been derived from the curve "Maximum Demand at Substation" accompanying Engineering Memorandum No. 94R5 of the Engineering Division, REA, dated August 21, 1950. The total number of consumers to be served in each substation area, rather than the number of consumers in a particular class, was used as a basis in arriving at the total and unit demands in order to reflect the probable overall diversity between classes of consumers in a given substation area. No adjustment for a power factor less than unity was applied, it being assumed for estimating purposes that the KVA demand as read from the curve was equal to the KW demand at the substation.

Summary and Conclusions

Pertinent information reflecting the data and conclusions arrived at regarding the present and future number of consumers, kilowatt-hour requirements, and kilowatt demands for the Glades Electric Cooperative, Inc. (Florida 35 Glades) are included in the attached Tables I to VII, inclusive.

Table VII (Summary of Power Requirements) indicates that approximately 826 consumers will be served by the Cooperative in 1954, 994 in 1957, and 1,253 in 1962, at an estimated maximum demand at substation of 2,924 kilowatts in 1954, 4,684 kilowatts in 1957, and 6,643 kilowatts in 1962. Likewise, it is estimated that the Cooperative's annual energy requirements at substations will approximate 8.3 million kilowatt-hours in 1954, 12.1 million kilowatt-hours in 1957, and 17.2 million kilowatt-hours in 1962.

Based on a field survey conducted by K. O. Peters, Engineer, Office of the Administrator, REA, USDA.

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The degree of attainment of area coverage by the Cooperative, as well as the achievement of the estimated kilowatt-hour consumption foreseen in this report, are contingent on the following important considerations:

- 1. An adequate, dependable source of low-cost power supply.
- 2. Dependable, adequate electrical power to the ultimate consumer with a minimum of interruption in service and at the lowest retail rate commensurate with "pay out" considerations.
- 3. A fully prosecuted power use program designed to attain the goals of saturation of appliances and farm equipment reflected by the estimates included in this report.

E. C. Weitzell, Program Analyst er flow or provide south for the control of the description of the south of the control of the c . Tigosa respectation of the angular statement attended of all have noted in a some limitation of animals and the some of the sound of the interior of because unique of more bedraments think a second some time and a second of the second of

TABLE !

COMPARATIVE ANNUAL OPERATING DATA OF CONSUMERS AND AVERAGE MONTHLY CONSUMPTION

5		AGE	\$ INCR.	1	20.7	32.1	-6.5	9.9	1	52.9
	TOTAL	AVERAGE	KEHI/NO. \$ INCR.	387	194	219	57.7	619	530	
		MEMBERS	è.	222	415	503	589	655	869	
	AVEN		KAH/NO. SINCR. ND.	1 -	22.0	-5.8	6.5	-4.6	1	18.1
	CITY OF MOORE HAVEN	AWERACE	KWH/ND.	52,784	64,417	10209	64,633	219,19	992.01	
	CITY OF	NEW BERS	°°	•	-	-	-	-	-	
	JAL	AVERAGE	KEH/ND. %INCR. NO.	- 1	277.5		-28.8	23.2	1	283.0
	LARGE COMMERCIAL	_	KEH/ND.	7,649	28,875	32,067	22,820	28,108	18,430	
	LARGE	MEMBERS	MD.	ev.	6	9	80	œ	6	
	MAL	AVERAGE	KETH/MO. %INCR.	1	2101	3.8	-1401	30.9	1	41.7
	COMMERCIAL	AVER	KENH/MO.	351	425	441	379	496	572	
	SMALL	WEMBERS	NOS	56	37	50	57	19	61	
	MTIAL	1	KWH/MO. SINCR.	:	1	-0-	54.5	29.4	1	83.9
	NONFARM RESIDENTIAL	AVERAGE	KWH/MO.	1	9000	=	17	22	31	
	NONFAR	MEMBERS	NO.	1	6	12	13	13	83	
Vo)		AGE	KWH/MO. & INCR.	1	39.0	3005	26.2	17.0	1	112.7
FLORIDA 35 GLADES (REV.)	FARM	AVERAGE	KWH/MO	59	82	101	195	158	185	\$INCR.
1 35 GL		WENBERS	NO.	192	365	433	510	572	/ 614	SUM OF YEARLY SINGR. (1947 - 1951) AVERAGE PER YEAR
FLOR IDA	•	YEAR 1		1947	1948	1949	1950	1951	1952 1/ 614	(1947 AVERAGI
							**	3 -		

1/ SIX MONTHS ONLY.

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TABLE 11

COMPARATIVE ANNUAL OPERATING DATA ON EMERGY REQUINEMENTS

	ENERGY		ENERGY	34	ENERGY	20	MAXIMUM	AVERAGE	TOTAL	TOTAL	OVERALL
YEAR	PURCHASED	ED	SOLD	-	LOSSES	ES	KM	COST	MILES	SERVICES	CONSUMER
	KSH	\$ INCR.	HIS	SINCR.	KGH.	%10SS	DEMAND	PER KNIH	ENERGIZED	CONNECTED	DENS 1TV
1947	1,053,492	1	1,028,884	1	24 2608	203	355	\$.02233	133	260	1.95
1948	2,552,634	14203	2,326,745	126.1	225,889	80	1,300	01498	250	197	1.84
1949	4,236,826	0*99	3,727,586	60.2	509,140	12.0	1,400	990 100	053	564	2,26
1950	4,612,830	8.9	4,073,126	606	539,704	11.7	*	•00953	342	6 28	18*1
1951	525182035	9.61	4,836,242	18.7	661,793	12.4	*	96600°	356	672	1,89
1952 I/	2022	1	2,221 ,543	***	354,469	13 08	*	20100	367	202	1601
SUM OF YEARLY \$1 (1947 * 1951) AVERAGE PER YEAR	SUM OF YEARLY \$INCR. (1947 * 1951) AVERAGE PER YEAR	236.8		28403		# T					

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TABLE 111

ESTIMATE OF LOADS - MOORE HAVEN SUBSTATION AREA *

FLORIDA 35 GLADES (REV.)								- 1	
	NUMBER	NUMBER OF CONSUMERS	JMERS		KW DEMAND		ARRUAL	AL KITH REQUIREMENTS	ENTS
TYPE OF CONSUMER	1954	1957	1962	1954	1957	1962	1954	1957	1962
				@0.849	@0.985	@1.213	@5700 ·	@3300	@4200
FARM	425	506	645	361	498	782	1.147.500	1.669.800	2,709,000
				956-10	@2,084	@2,402	@6840	@7500	@8700
SMALL COMMERCIAL	43	20	09	84	104	144	294,120	375,000	522,000
				@0.183	@0.263	@0.352	@480	6720	. 096@
PUBLIC BUILDINGS	8	6	6	8	2	3	3 ,8,0	6 ,480	8,640
				@15/1-5DF	@15/1.5DF	@15/1.5DF			,
ARCHIBALD IRRIGATION	-		-	10	0.0	0.1	3,000	3×000	3,000
				@70/1.50F	@70/1.5DF	@70/1.50F			•
ARCHIBLAD EXPEDITION	-		-	47	47	47	*54°000	154,000	154,000
				@23/2.0DF	@23/2°00F	@23/2,0DF			
LAND-O-SUN (CREAMERY)	-	-	-	12	12	12	00966	008 6	10,200
				@50/2°50F	@50/2°2DF	@50/2.5DF			
SHAWNEE FARM SHOPS	-	-	-	20	20	20	62,000	62,000	62,000
				@50/3-0DF	@50/3°0DF	@50/3.0DF			
SHAWNEE PACKING SHED	-	-		17	17	17	50 000	50,000	50,000
				@50/1-5DF	@50/1.5DF	@50/1.5DF			
SHAMNEE FARM DRAINAGE	-		-	33	33	33	15,000	15,000	15,000
				@9/2,00F	@9/2.0DF	@9/2,0DF	•	`	
U. S. SUGAR FEEDWILL	-	-	-	5	5	5	10,000	10,000	10,000
				@330/1°250F		@365/1.25DF @490/1.25DF			•
CITY OF MOORE HAVEN		-	-	264	292	392	875,000	1,000,000	1,400,000
				@50/1.5DF	@50/1.5DF	@50/1.50F			•
J. F. SMDAK	-	-	-	33	33	33	15,000	15.000	15,000
					,	`			
SUB-TOTAL	485	574	123	888	1,073	1,9498	2,639,060	3,370,080	4,958,840

* INDICATED AS SIX MONTHS LOAD - INCLUDEB:
CITY OF CLEWISTON, U.S. SUGAR CORP., AND
RANSEY FIBER PLANT. U.S. SUGAR CORP.
LOAD NOT SHOWN ON THIS TABULATION (TABLE IV)
NOTE: CONT'D. ON NEXT PAGE.

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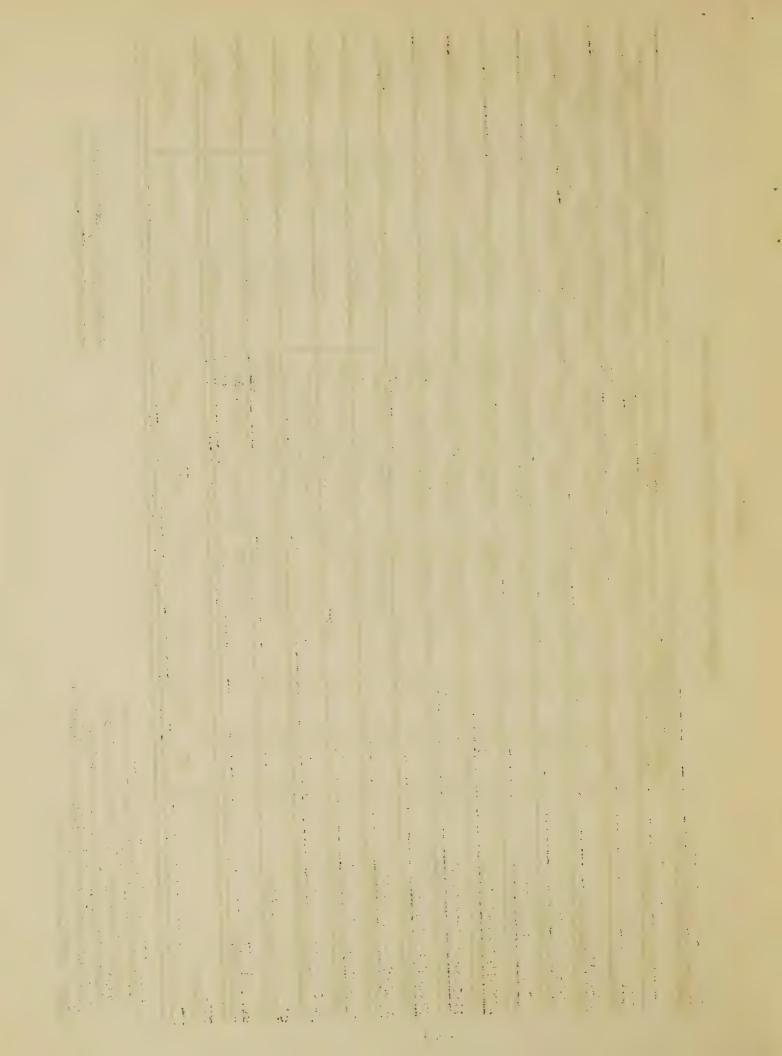


TABLE III (CONT'D.)

ESTIMATE OF LOADS - MOORE HAVEN SUBSTATION AREA *

FLORIDA 35 GLADES (REV.)	NB INVOCED	SOUTH SHOOL OF CHISHING	MEDG		KW DEMAND		ANNIUA	ANNUAL KWH REQUIREMENTS	ENTS
TYPE OF CONSIMER	1954	1957	1962	1954	1957	1962	1954	1957	1962
				@18/1,2DF	@18/1.2DF	@18/1°20F		` .	
MAXLEY SECURITIES (HAY DRYER)	***	-	-	15	15	15	12,000	12,000	12,000
PEACIFY		-	-	@7/1.50F	e7/1.50F	@7/1.50F	009*9	009*9	6,500
				@15/1-50F	@15/1°50F	@15/1.5DF	, 6,60	6 600	, , , ,
R. R. CHRISTIAN	-	-	-	0.0	0.1	2	20060	20060	
	-	-	•	@7/1.50F	@7/1.50F	@7/1.50F	4,200	4,200	4,200
OTCKERSON ** OCT COMMEDCIAL CONTENT (ALL)	-		-	@\$0/1-50F	@50/1.50F	@50/1-5DF	@20°000	@20,000	@50°000,
IRRICATION	8	7	6	29	233	300	000 00	140,000	180,000
		5)1-00		@15/1-50F	@15/1.50F	@15/1~50F	97500	@7500	67500
IRRIGATION	8	7	=	30	70	110	22,500	52,500	82,500
				@40/2.5DF	@40/2.5DF	@40/225DF	,		000
FLORIDA CONSERVATION SCHOOL	-	1	-	16	16	91	72,000	72,000	(2,000
				@70/1.20F	@70/1.2DF	@70/1.2DF	036,000	@36,000	\$36,000
U. S. SUGAR CANE HOISTS (6 MO.)	.) 3	3	3	175	175	175	108,000	1 08 0 000	1.08,000
					@150/1,2DF	@150/1.2DF			
MOORE HAVEN ICE PLANT (6 MO.)	*	-			114	114	•	000,000	000,000
					@250/1-5DF	@250/1.5DF		,	
DISSTON ISLAND (DRAINAGE)	*00	-			167	167		100,000	100,000
									,
SUB-TOTAL				!			2,910,960	4,471,980	6,130,740
							. %110	. %210	0.6%
PLUS DIST. LOSSES (APPROX.)							596,040	916,020	1,167,260
						,	,		, 000 6
TOTAL	498	598	753	1,211	1,883	2,415	3,507,000	2.388.000	(100,000)

^{*} U. S. SUGAR CORP. LOAD NOT SHOWN ON THIS TABULATION (SEE TABLE 1V)

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34.50

32.7%

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ANNUAL LOAD FACTOR -

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TABLE IV

ESTIMATE OF LOADS - MOORE HAVEN SUBSTATION AREA *

	NUMBER	NUMBER OF CONSUMERS	JMERS		KW DEMAND		AMBRUAR	JAL KWIII REQUIREMENTS	SMENTS
TYPE OF CONSUMER	1954	1954 1957	1962	1954	1957	1962	1954	1057	6901
				,		,			170
U.S. SUGAR CORP.*			~	1,325	1,825	2,700	3.250.000	4.320.000	6-210-000
SUB-TOTAL							3.250.000	, , , , ,	000 000 9
							78-70 8000	4025U4UUU	000510500
Total Charles and Charles							67%	. %90	. %9®
PLUG DISI. LUSSES (APPRUX.)							245,000	276,000	403,000
						,			
TOTAL	-	-	-	1,325	1,825	2,700	3,495,000	4,596,000	000-819-9
									L
* INDICATED AS SIX MONTHS LOAD. CITY OF CLEWISTON,	OAD. C1.	TY OF CL	EWISTON,		ANNUAL LOAD FACTOR	D FACTOR -	30.1%	28.7%	80
U.S. SUGAR CORPORATION, AND RAMEY FIBER PLANT.	ND RAMEY	FIBER PI	ANT						

PROGRAM ANALYST, OFFICE OF THE ADMINISTRATOR, REA - AUGUST 1952



TABLE V

ESTIMATE OF LOADS - LAKE ANNIE SUBSTATION AREA

FLORIDA 35 GLADES (REV.)									
	NUMBER	NUMBER OF CONSUMERS	JWERS		KW DELLAND		ANNI	ANNUAL KIM REDU IREMENTS	MENTS
TYPE OF CONSUMER	1954	1957	1962	1954	1957	1962	1954	1957	1962
				16800	@1.035	@1.244	62700	. 00250	64200
FARM	284	338	430	253	350	535	766,800	1,115,400	1 2806 ,000
				@2.054	@2.190	020463	\$6840	. 00220	, 0028@
SMALL COMMERCIAL	31	35	40	99	77	99	212,040	262,500	348,000
	-			@0.193	60.277	196000	6480	@720 ·	. 096@
PUBLIC BUILDINGS	9	7	7		2	3	2,880	5 -040	6,720
LARGE COMMERCIAL:				@10/1.50F	@10/1.50F	#G10/10-5DF	,	•	
DUPRANCE RANCH	-	-	-	7	7	7	22,000	24,000	24 0000
				@22/4.00F	622/4c 00F	@22/4,00F		•	•
TOPE PACKING SHED		-	-	5	5	5	10,000	10,000	000,01
				@20/4,0DF	@20/4,00F	@20/4°0DF	`		•
MARKAL. REYNOLDS & SMITH	-	-		5	5	. 5	. 16,800	. 16,800	, 16,800
. LARGE COMMENCIAL (POTENTIAL):		Menne substi		@50/1.5DF	@50/1-5DF	@50/1.5DF	@20,000	@20,000	@20,000°
IRRIGATION	-	3	5	33	100	167	20,000	60,000	100,000
	palma pulla			@15/1°50F	@15/1.50F	@15/1°50F	· 00520	. 00520	. 00220
IRRIGATION	-	3	4	20	30	40	15,000	22,500	30,000
NAVAL STORES		1		@100/1.5DF	@100/1.5DF	@100/1.50F		.000,000	@\$0*000.
(ORANGE GROVE IRRIGATION)	course	9	10	2	400	199	1	300,000	500,000
STOT GIS									
SCO-101AL							1,065,520	1,816,240	2,841,520
100000000000000000000000000000000000000							. %81@	617%	@16% ·
PLUS DISI, LOSSES (APPROX.)							233,480	.971,760	541,480
TOTAL	327	395	499	388	926	1 ,528	1,299,000	2,188,000	3,383,000
					ANNUAL LOAD FACTOR -	FACTOR -	38.2%	25.6%	25.3%

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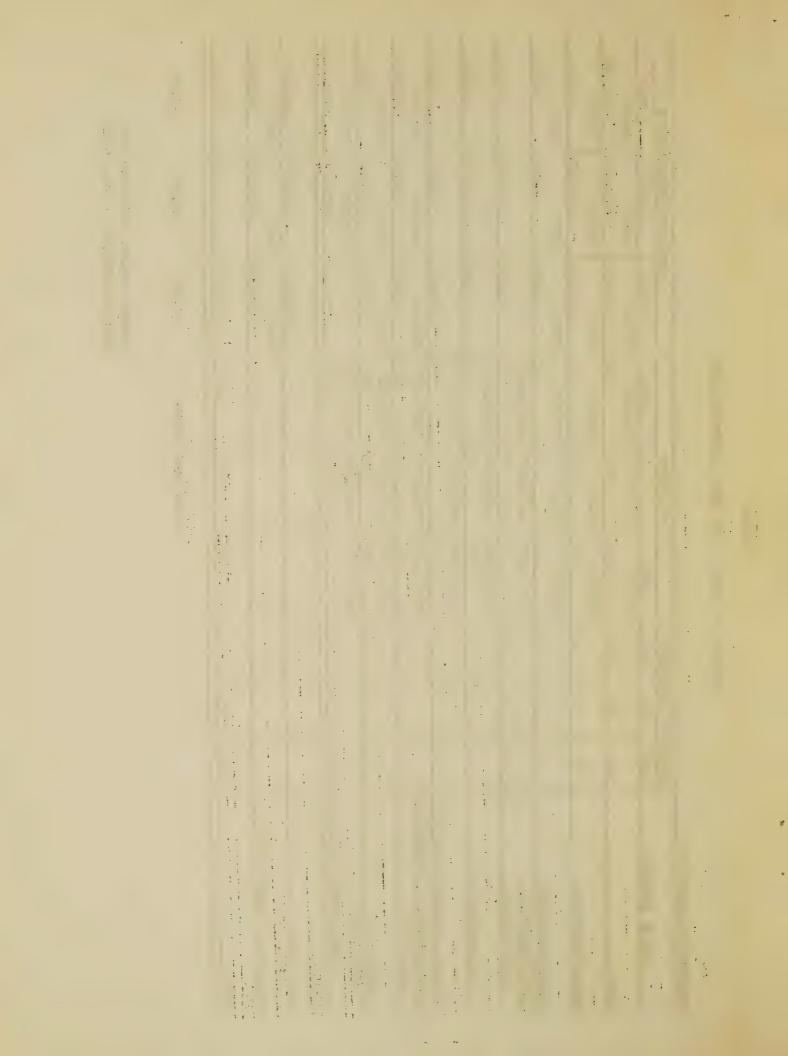


TABLE VI

ESTINATE OF LOADS - SUMMARY OF BOWER REQUIREMENTS (BY CLASSIFICATION OF CONSUMERS)

15 2360 1,799,400 1,772,500 4 ,515,000 15,182,260 2,111,740 870,000 17,294,000 6,210,000 ANNUAL KMH REQUIREMENTS 11,520 7,226,480 10,608,220 2,785,200 637,500 000 666 6 1 12563,700 1,455,000 4,320,000 12,172,000 1957 277,500 506,160 6,720 19149300 1,074,520 8,301,000 3,250,000 1,271,800 1954 1962 1,317 243 6,9643 9 1,756 2,700 621 KW DEMAND 848 4,684 1957 181 521 1,305 1,825 614 138 2,924 1954 493 341 1,325 1962 1,075 100 1,253 16 45 16 NUMBER OF CONSUMERS 844 994 85 91 32 1 957 16 826 602 74 1954 91 2 14 LARGE COMMERCIAL (POTENTIAL) PLUS DIST. LOSSES (APPROX.) FLORIDA 35 GLADES (REV.) U.S. SUGAR CORPORATION TYPE OF CONSUMER SMALL COMMERCIAL LARGE COMMERCIAL PUBLIC BUILDINGS SUB-TOTAL TOTAL FARM

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							032,085,00	
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TABLE VII

ESTINATE OF LOADS - SUMMARY OF POWER REQUIREMENTS (BY SUBSTATIONS)

FLORIDA 35 GLADES (REV.)									
	NUMBE	NUMBER OF CONSUME	Æ RS		KW DESAND		ANNU	ANNUAL KNH REQUIREMEN'TS	MEN IS
SUBSTATION AREAS	1954	1957	1962	1954	1957	1965	1954	1957	1962
MOORE HAVEN	498	598	753	1,2211	1 9883	2,415	3,507,000	5,388,000	7,298,000
MOORE HAVEN *		••	-	1,325	1,825	2,700	3 24 95 ,000	4,596,000	000881989
LAKE ANN IE	321	395	499	388	916	1,528	1,299,000	2,188,000	3,383,000
TOTAL	826	994	1,253	2,924	4,684	6,643	8,301,000	12,172,000	17,294,000
* U.S.SUGAR CORPORATION (LOCATED ON TABLE 1V).	CATED ON TAB	LE 1V).			ANNUAL L	ANNUAL LOAD FACTOR -	32.4%	29.6%	29 - 7%

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